

## High Efficiency Solar Furnace Core, Phase I

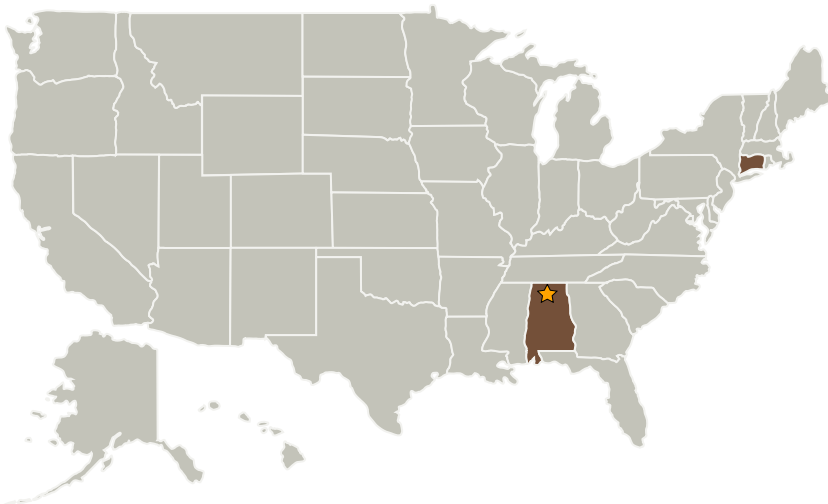
Completed Technology Project (2005 - 2005)



## Project Introduction

It is proposed to develop a high efficiency solar furnace core that greatly lessens the heat losses from the furnace core, either greatly reducing the amount of solar radiation needed to reach a specified temperature, or greatly increasing the temperature it can achieve. Specific program goals include: 1) Specification of the techniques to be used for generating the appropriate vacuum in the furnace and the vacuum level that must be achieved to provide insulation from gas convection. 2) Improved heat and solar radiation shields, 3) Improved crucible technology, and 4) Very high temperature furnace technology (2500oC). Thanks to extensive furnace technology development work at TvU, the relevant technologies can be demonstrated within the limited resources of a Phase 1 program, allowing concentration on overall solar furnace designs. TvU will deliver a small prototype solar furnace to NASA at the end of Phase 2, together with a variety of furnace technologies, depending on NASA's present and future needs. Improved solar furnaces will lead to significant new extra-terrestrial materials processing capabilities.

## Primary U.S. Work Locations and Key Partners



| Organizations Performing Work         | Role                    | Type        | Location                 |
|---------------------------------------|-------------------------|-------------|--------------------------|
| ★ Marshall Space Flight Center (MSFC) | Lead Organization       | NASA Center | Huntsville, Alabama      |
| Thoughtventions Unlimited             | Supporting Organization | Industry    | Glastonbury, Connecticut |



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## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Marshall Space Flight Center (MSFC)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

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### Primary U.S. Work Locations

Alabama

Connecticut

### Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Stephen C Bates

### Technology Areas

**Primary:**

- TX03 Aerospace Power and Energy Storage
  - └ TX03.1 Power Generation and Energy Conversion
    - └ TX03.1.2 Heat Sources